

Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claims 1-31 (canceled).

32. (currently amended) An image processing method for converting [[a]] an input color signal, being input to an image output apparatus, into a color material signal, the image processing method comprising the steps of:

defining a first line including a starting point and a first end point as end points of the first line;

defining one or more second lines, each second line including said starting point and a corresponding second end point as end points of the second line;

defining one or more third lines, each third line including said starting point and a third end point as end points of the third line;

determining one or more color material signals on the first, second, and third lines;

defining a plurality of tetrahedrons, each being formed by connecting said first line, a corresponding one of said plurality of second lines, an additional line connecting said first and second end points, and additional lines connecting an additional point with said starting point, with said first end point and with the second end point of the corresponding second line, respectively, identifying one of said tetrahedrons having the input color signal situated therein and obtaining said color material signal by performing interpolation on the identified tetrahedron, if said input color signal is not substantially within a color range of memory color;

and

defining a tetrahedron formed by said first line, one of said second lines, one of said third lines, and other lines connecting the third end point of the one of the third lines with the second end point of the one of the second lines, and connecting the first end point with the third end point of the one of the third lines and with the second end point of the one of the second lines, respectively, obtaining [[a]] said color material signal situated between any of the first, second, and third lines by interpolation according to the first, second, and third lines forming said tetrahedron, if said input color signal is substantially within said color range of memory color,

wherein the first line is an achromatic line in a reproducible color range of the image output apparatus, the one ~~or more~~ of the second lines ~~are one or more lines~~ is a line situated on an outermost boundary line of the reproducible color range, and ~~except for the achromatic line,~~ the one ~~or more~~ of the third lines ~~are one or more lines~~ is a line situated within the reproducible color range of the image output apparatus;

~~wherein the first line is a line extending between white and black, the one or more second lines are one or more lines extending between black and a primary color and/or a secondary color, and the one or more third lines are one or more lines passing through a color range for memory color;~~

wherein the color range of memory color includes human skin color, ocean blue color, sky blue color, and plant green color [[:]]

~~wherein the first line is a line extending between white and black, the one or more second lines are one or more lines extending between black and a primary color and/or a secondary colors, and the one or more third lines are one or more lines connecting black with one or more points situated between white and a primary color or a secondary color;~~

~~wherein the amount of black for each point on the first, second and third lines is determined according to a distance from black;~~

~~wherein a black starting point for the third line starts later compared to black starting points for the other lines.~~

Claims 33-36 (canceled).

37. (previously presented) The image processing method as claimed in claim 32, wherein the one or more color material signals on the first, second, and third lines are one or more signals of same color having different density.

38. (previously presented) The image processing method as claimed in claim 32, wherein the one or more color material signals on the first, second, and third lines are one or more signals of black.

39. (previously presented) The image processing method as claimed in claim 38, wherein the one or more color material signals of black on the one or more third lines are utilized to determine a maximum amount of black for a signal situated between the first line and the one or more third lines.

40. (previously presented) The image processing method as claimed in claim 38, wherein the one or more color material signals of black on the one or more second lines are utilized to determine a maximum amount of black for the one or more color materials of black

and obtain a maximum range for the reproducible color range.

41. (previously presented) The image processing method as claimed in claim 38, wherein the one or more color material signals of black are determined to be black starting points at which graininess is unnoticeable.

42. (previously presented) The image processing method as claimed in claim 32, wherein the one or more color material signals are determined according to a designation of a user.

43. (original) The image processing method as claimed in claim 32, wherein the one or more third lines are controlled according to a characteristic of an input image.

44. (original) The image processing method as claimed in claim 32, further comprising a step of creating a table indicative of the obtained color material signal corresponding to the input color signal.

45. (original) An image processing apparatus comprising:
a CPU,
wherein the CPU converts an input color signal into a color material signal by referring to the table as set forth in claim 44.

46. (currently amended) An image processing method for converting [[a]] an input

color signal, being input to an image output apparatus, into a color material signal, the image processing method comprising the steps of:

defining a first line including a starting point and a first end point as end points of the first line;

defining one or more second lines, each second line including said starting point and a corresponding second end point as end points of the second line;

defining one or more third lines, each third line including said starting point and a third end point as end points of the third line;

determining one or more color material signals on the first, second, and third lines; and

defining a plurality of tetrahedrons, each being formed by connecting said first line, a corresponding one of said plurality of second lines, an additional line connecting said first and second end points, and additional lines connecting an additional point with said starting point, with said first end point and with the second end point of the corresponding second line, respectively, identifying one of said tetrahedrons having the input color signal situated therein and obtaining said color material signal by performing interpolation on the identified tetrahedron, if said input color signal is not substantially within a color range of memory color;
and

defining a tetrahedron formed by said first line, one of said second lines, one of said third lines, and other lines connecting the third end point of the one of the third lines with the second end point of the one of the second lines, and connecting the first end point with the third end point of the one of the third lines and with the second end point of the one of the second lines, respectively, obtaining [[a]] said color material signal situated between any of the first, second, and third lines by interpolation according to the first, second, and third lines forming said

tetrahedron, if said input color signal is substantially within said color range of memory color,

~~wherein the first line extends between white and black, the one or more second lines extend between black and a primary color and/or a secondary colors, and the one or more third lines connect black with one or more points situated between white and a primary color or a secondary color,~~

~~the amount of black for each point on the first, second and third lines is determined according to a distance from black, and~~

~~a black starting point for the third line starts later compared to black starting points for the other lines~~

the color range of memory color includes human skin color, ocean blue color, sky blue color, and plant green color.

47. (currently amended) The image processing method as claimed in claim [[46]] 48, wherein the one or more color material signals of black are determined to be black starting points at which graininess is unnoticeable.

48. (previously presented) The image processing method as claimed in claim 46, wherein the one or more color material signals on the first, second, and third lines are one or more signals of black.

49. (previously presented) The image processing method as claimed in claim 48, wherein the one or more color material signals of black on the one or more third lines are utilized to determine a maximum amount of black for a black signal situated between the first line and

the one or more third lines.

50. (previously presented) The image processing method as claimed in claim 48, wherein the one or more color material signals of black on the one or more second lines are utilized to determine a maximum amount of black for the one more color materials of black and obtain a maximum range for the reproducible color range.

51. (previously presented) The image processing method as claimed in claim 46, wherein the one or more color material signals are determined according to a designation of a user.

52. (previously presented) The image processing method as claimed in claim 46, wherein the one or more third lines are controlled according to a characteristic of an input image.

53. (previously presented) The image processing method as claimed in claim 46, further comprising a step of creating a table indicative of the obtained color material signal corresponding to the input color signal.

54. (previously presented) An image processing apparatus comprising:
a CPU,
wherein the CPU converts an input color signal into a color material signal by referring to the table as set forth in claim 52.

55. (new) The image processing method as claimed in claim 46, wherein the first line extends between white and black, the one of the second lines extends between black and a primary color and/or a secondary color, and the one of the third lines connects black with one or more points situated between white and a primary color or a secondary color.

56. (new) The image processing method as claimed in claim 46, wherein an amount of black for each point on the first, second and third lines is determined according to a distance from black.

57. (new) The image processing method as claimed in claim 46, wherein a black starting point for the third line starts later compared to black starting points for the other lines.

58. (new) The image processing method as claimed in claim 32, wherein the first line extends between white and black, the one of the second lines extends between black and a primary color and/or a secondary color, and the one of the third lines passes through the color range for memory color.

59. (new) The image processing method as claimed in claim 32, wherein the first line extends between white and black, the one of the second lines extends between black and a primary color and/or a secondary colors, and the one of the third lines connects black with one or more points situated between white and a primary color or a secondary color.

60. (new) The image processing method as claimed in claim 32, wherein the amount of

black for each point on the first, second and third lines is determined according to a distance from black.

61. (new) The image processing method as claimed in claim 32, wherein a black starting point for the third line starts later compared to black starting points for the other lines.